REMARKS

Claims 1, 2, 4-6 and 8-11 are pending in the present application. The Office Action presents the following points in connection with the pending claims: 1) claim 11 is rejected under 35 USC § 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which Applicant regards as the invention; 2) claims 1 and 4 are rejected under 35 U.S.C. § 102(b) as anticipated by Rinse et al. (US 5,437,750); 3) claim 2 is rejected under 35 U.S.C. § 103(a) as unpatentable over Rinse et al. alone; 4) claim 5 is rejected under 35 U.S.C. § 103(a) as unpatentable over Rinse et al. in view of van Dreumel (US 5,536,344); 5) claims 6 and 8-10 are rejected under 35 U.S.C. § 103(a) as unpatentable over Rinse et al. in view of Smith et al. (US 6,488,460); and 6) claim 11 is rejected under 35 U.S.C. § 103(a) as unpatentable over Rinse et al. in view of Belanger et al. (US 5,612,117).

Claims 1, 2, 4-6, 8 and 10 are currently amended. Claim 11 is cancelled and claims 3 and 7 were previously cancelled. New claims 12-14 are added.

Reconsideration and withdrawal of the rejections is respectfully requested in view of the amendments presented herein and the following remarks.

The amendment of claim 1 clarifies that the flange of the insert has a larger diameter than the body, and that bonding of the insert at least occurs between the bottom side of the flange and the outer side of the cover layer of the sandwich panel. Basis for these amendments is found in, for example, the drawing, [0016], [0051], [0015] and [0053] of the US application as published (US 2007/0102094 A1).

Claim Rejections – 35 USC § 112

Claim 11 is the only claim rejected under Section 112. Claim 11 is cancelled rendering this rejection moot.

Claim Rejections – 35 USC § 102

The Examiner rejects claims 1 and 4 as anticipated by Rinse et al. (US 5,437,750). For a reference to anticipate a claim, the reference must disclose each and every feature of the claim. Applicant respectfully submits Rinse fails to disclose each and every feature of claims 1 and 4, and therefore fails to anticipate these claims for at least the following reasons.

Rinse is discussed in the Background part of Applicant's specification. The thermoplastic insert (1) used by Rinse comprises a body, but no flange (col. 3, l. 26-34). This teaching is contrary to Applicant's claim 1 that recites an "insert unit comprising a body and a flange having a larger cross-section than the body." In fact any flange (protruding head disc and bottom flange) is considered a drawback (col. 2, l. 44-46) by Rinse. Rinse, thus, teaches away from Applicant's recited method of claim 1.

Additionally, Rinse's insert comprises rims as thermoplastic sacrificial parts, indicated by reference numerals 13 and 14, that are intended to flow into a gap (17a; 17b) between the respective skin hole walls and the insert in order to provide a fused bond (col. 4, l. 54-65). See also col. 2, l. 56 -col. 3, l. 2 and claim 1. The method according to Rinse requires a through hole to be made through both skins and the core of the sandwich panel (col. 4, l. 42-53; claim 1). Drilling a through hole of this kind might bring about delamination, which is preferably counteracted by placing PERSPEX plates at the top and back side of the sandwich panel, which plates are also drilled (col. 4, l. 42-53). As a consequence Rinse's sandwich panel is not exposed to pressure during application of ultrasonic energy. In contrast, Applicant's claim 1 recites applying pressure in addition to ultrasonic energy.

Moreover, the sandwich panel disclosed by Rinse may comprise fiber-reinforced thermoplastic skins having an intermediate layer of foam or honeycomb material. More details about the intermediate layer are not provided by Rinse, but the way the intermediate layer is drawn in the figures indicates a honeycomb structure. (Compare the similar manner of

illustration in Van Dreumel and Smith, to be discussed hereinbelow, wherein the detailed description of the figures explicitly refers to honeycomb structures.) In contrast, Applicant's claim 1 recites the core layer is a thermoplastic foam. Contrary to the assumption at page 4 of the Office Action, the main advantage thereof in a method of providing an insert in a sandwich panel is not linked to its low weight, but a smaller local reduction in strength due to maintenance of the structural integrity.

Accordingly, Rinse fails to disclose each and every feature of claim 1 and thus fails to anticipate claim 1. Claim 4 is dependent upon claim 1 and is believed allowable for the same reasons as claim 1.

Claim Rejections – 35 USC § 103

Claims 2, 5, 6, 8-10 and 11 stand rejected under Section 103. Applicant respectfully submits none of the cited references, taken alone or together renders these claims obvious.

Ecah of these claims is directly or indirectly dependent upon claim 1 and is believed allowable for the same reasons stated above for claim 1. Moreover, each claim is believed separately allowable over claim 1 for at least the following reasons.

Regarding claim 2, which is rejected on Rinse alone, the Office Action incorrectly states at page 4: ".. however, it is well known to create foam products from thermoplastics and it would have been an obvious matter of design choice for a person having ordinary skill in the art at the time of the invention to choose thermoplastic as the construction material in order to provide a light-weight and strong structural filling material." As noted above, this assumption, even when applied to claim 1, is incorrect. Moreover, the Office Action fails to provide any evidence for this assumption. The other references cited in the Office Action show only (metal) honeycomb structures, contradicting this assumption.

Regarding claim 5, the deficiencies of Rinse are not remedied by Van Dreumel (US 5,536,344), a reference also discussed in the Background part of the specification of the present application. Van Dreumel discloses a method of rotation welding a thermoplastic insert in a sandwich panel, wherein the insert comprises a flange. The sandwich panel of Van Dreumel has a core comprising a thin metal ribbing to form honeycomb cells (18) (col. 3, l. 5). At the position of the insert to be placed, the whole core material is removed (see fig. 2) using a cutting tool (20), e.g. of a high speed steel or carbide (col. 3, l. 26-27), again an unambiguous pointer to sandwich panels having a metal honeycomb structure.

There is no reason to combine the teachings of Rinse and Van Dreumel. In fact, as noted above, Rinse teaches away from using an insert having a flange. As a result, the skilled person if intending to mount a thermoplastic insert having a flange would not use Rinse. Also replacement of rotation welding in Van Dreumel only by ultrasonic welding according to Rinse without taking into account the further teaching and requirements set forth by Rinse is unlikely to the skilled person. Van Dreumel fixes the insert's flange on the upper skin and its bottom to the lower skin of the sandwich panel, while Rinse secures the insert to vertical hole walls of both skins using sacrificial material. Thus both known methods have contradicting requirements and therefore it is not obvious to combine them in the way as recited in present claim 1.

Therefore, claim 1 is not rendered obvious over the asserted combination of Rinse and Van Dreumel. The other claims, including claim 5, being dependent from a patentable main claim 1, are also not rendered obvious by a combination of Rinse and Van Dreumel.

Claim 6 has been amended, and because of the amendment the reference to Smith is believed no longer applicable. In the method of claim 6 a part of the covering layer is not drilled away, but folded into the hole. This part has two functions. It serves as an additional bonding area between panel and insert and it also strengthens the wall of the hole. Like Rinse,

Smith drills a through hole through the total thickness of the panel. Neither reference teaches this feature.

With respect to claim 8, van Dreumel teaches a deformation during welding (see, e.g., Fig. 6) thereby making a recess to allow flush alignment of the insert. In Van Dreumel the area around the insert is deformed during welding in order to allow the insert to be flush with the surface of the upper skin (see, e.g., col. 3, l. 62-65). This will also result in local deformation ("crushing") of the honeycomb structure, resulting in deterioration of the structural integrity (reduced strength) exactly in the vicinity of the insert; thus in a position which will be subjected to a heavy load. Welding and deformation are performed simultaneously. Smith has a through hole through the complete thickness of the panel. Smith is silent about the way the edges around the hole are deformed. With respect to Applicant's method, the head of an insert is to be positioned flush with the top covering layer, then deformation is performed as a first step (making a recess, for example, by a so called "hot/warm deformation method" of Applicant's claim 14) leaving the structural integrity intact, then the hole is made followed by ultrasonic welding of the insert. This deformation in advance also allows subsequent ultrasonic welding to be performed very rapidly. In contrast, Van Dreumel requires a relatively long welding time in order to deform the facing sheet, by rotation even if a foam core would be used, to melt the foam just below the facing sheet. Such a longer welding time would also inevitably result in the destruction of (at least serious damage to) the thermoplastic insert, teaching away from Applicant's recited method.

Furthermore, a sandwich panel having a foam core the use of a crushing step as taught by Van Dreumel would not be possible because the foam is a far more homogeneous substance having a higher and completely homogeneous density in comparison with a metal honeycomb structure.

As Smith certainly discloses a metal honeycomb core structure a hot/warm deformation method would not result in a recess in the panel, as recited in Applicant's claim 8.

Claim 10 recites that the recess to be formed in the sandwich panel (which requires only deformation not removal of material) is reinforced with an additional fiber-reinforced thermoplastic layer, as explained in [0025]. No mention of this feature is made in the Office Action, or where it is disclosed in either of the two cited references, Rinse and Smith.

New Claim 12-14

New claims 12-14, that are dependent either directly or indirectly upon claim 1, have been added reciting that cooling is carried out under pressure (see e.g. [0011] and [0053]), that less than 90% core material is removed (see e.g. [0055]) and the steps of the hot/warm deformation method [0023]-[0024] respectively.

New claim 13 relates to a preferred embodiment for carrying out the method as defined in claim 5.

CONCLUSION

In light of the foregoing remarks set forth above, Applicant respectfully submits that the present application is in condition for allowance and as such, favorable allowance of the present application is hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully Submitted,

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